

**Federal Court of Appeal**



**Cour d'appel fédérale**

**Date: 20230913**

**Docket: A-181-21**

**Citation: 2023 FCA 184**

**CORAM: GLEASON J.A.  
WOODS J.A.  
MACTAVISH J.A.**

**BETWEEN:**

**GREENBLUE URBAN NORTH AMERICA INC.**

**Appellant**

**and**

**DEEPROOT GREEN INFRASTRUCTURE, LLC  
and DEEPROOT CANADA CORP.**

**Respondents**

Heard at Toronto, Ontario, on May 10, 2023.

Judgment delivered at Ottawa, Ontario, on September 13, 2023.

**REASONS FOR JUDGMENT BY:**

**GLEASON J.A.**

**CONCURRED IN BY:**

**WOODS J.A.  
MACTAVISH J.A.**

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**REASONS FOR JUDGMENT**

**GLEASON J.A.**

[1] The appellant, GreenBlue Urban North America Inc. (GreenBlue), appeals and the respondents, DeepRoot Green Infrastructure LLC and DeepRoot Canada Corp. (collectively, DeepRoot, unless the context requires otherwise), cross-appeal from the judgment of the Federal Court in *DeepRoot Green Infrastructure, LLC v. GreenBlue Urban North America Inc.*, 2021 FC 501, 189 C.P.R. (4th) 211 (*per* McDonald J.).

[2] In that judgment, the Federal Court allowed DeepRoot's action for patent infringement and dismissed GreenBlue's counterclaim for invalidity in respect of two patents owned by DeepRoot Green Infrastructure LLC, namely Canadian Patent 2,552,348 (the 348 Patent) and Canadian Patent 2,829,599 (the 599 Patent). The Federal Court issued an injunction, enjoining GreenBlue from infringing Claims 1 to 5, 7 to 8, 11 to 14, 16 to 20, and 22 to 24 of the 348 Patent and Claims 1 to 4 of the 599 Patent until the expiry of the two Patents. It also awarded DeepRoot a relatively modest amount as compensation on account of reasonable royalties.

[3] In its appeal, GreenBlue seeks to overturn the Federal Court's findings on validity and infringement and requests an order dismissing DeepRoot's action and granting its counterclaim. As will become apparent from the Reasons that follow, GreenBlue raises several arguments in support of its appeal.

[4] For its part, in its cross-appeal, DeepRoot seeks to set aside the portion of the Federal Court's judgment awarding it compensation on account of royalties. It asks this Court to instead award an accounting of profits or, in the alternative, to remit to the Federal Court for reconsideration of the appropriateness of an award of an accounting of profits. DeepRoot submits that the Federal Court made errors in principle and palpable and overriding errors in fact in finding that GreenBlue had not profited from the sale of its infringing products. As this finding underpinned the Federal Court's decision to decline to award DeepRoot an accounting of profits, DeepRoot says that this portion of the Federal Court's judgment should be set aside.

[5] For the reasons that follow, I largely agree with DeepRoot's arguments with respect to both the appeal and the cross-appeal. I would accordingly dismiss this appeal, grant the cross-appeal, and remit the issue of the appropriateness of an award of an accounting of profits to the Federal Court for redetermination in accordance with these Reasons, the whole with costs to DeepRoot.

I. Background and the 348 and 599 Patents

[6] To put the issues in context, some background is necessary.

[7] The two Patents in suit relate to a system and a component part of a system designed to foster tree growth in urban environments. Growing trees successfully in an urban environment may be difficult due to problems with compacted soil and conflicts with infrastructure, such as roadways, sidewalks and buildings. This may lead to the lack of a consistent water supply for the trees, as well as a lack of appropriate accommodation for their roots, which may damage hardscape surfaces. The 348 and 599 Patents claim to provide solutions to these problems.

[8] The 348 Patent was issued on January 7, 2014, and the 599 Patent was issued on September 26, 2017. Both were filed on January 14, 2005, claim priority to a U.S. patent application filed on January 15, 2004, were laid open to the public on August 4, 2005, and will expire on January 14, 2025.

[9] The 348 Patent, entitled “Integrated Tree Root and Storm Water System”, claims a system for the management of tree roots and storm water runoff in urban areas. The 348 Patent more particularly relates to the use of integrated cells “... in a structural system for supporting sidewalks and other paved surfaces that enables tree growth and accommodates filtering, retention, storage and infiltration of storm water while preventing hardscape damage” (348 Patent at para. 2).

[10] The claims in suit of the 348 Patent are claims 1 to 5, 7 to 8, 11 to 14, 16 to 20, and 22 to 24. Of these, only Claim 1 is an independent claim. For purposes of this appeal, it is necessary to focus only on Claim 1, which claims:

1. A structural cell system for supporting hardscape areas that enables tree root growth and accommodates filtering, retention storage and infiltration of storm water while preventing hardscape damage, comprising;

a plurality of structural cells positioned below a hardscape substantially covering the structural cells, the structural cells each comprising:

a base, a top, and structural members positioned therebetween so as to maintain the base and the top at least approximately 8 inches apart, the base, and structural members collectively defining a volume that includes the base, top, and structural members, wherein at least approximately 85% of the volume can be filled with soil;

wherein the structural cell bears substantially the entire load of both the hardscape and commercial vehicle traffic directed thereover, while maintaining the soil within the volume in a low compacted state accommodating natural growth of structural roots of a tree within the volume;

one or more permeable barriers around the structural cells;

water ingress into the plurality of structural cells; and

water egress from the plurality of structural cells.

[11] The 599 Patent, issued following a divisional application arising from the 348 Patent, claims a structural cell for use in a system like that claimed in the 348 Patent. It contains four claims, which provide:

- 1 A structural cell for supporting hardscape, the cell comprising:  
a base; and  
  
periphery support members engaging the base and extending outwardly from said base, for attaching to a base of another cell or a lid and for supporting said hardscape, said support members being sized and arranged so that at least approximately eighty five percent of a volume defined by outer edges of said cell is a void space.
- 2 The structural cell of claim 1 further comprising said lid attachable to said periphery support members for supporting said hardscape.
- 3 The structural cell of claim 2 wherein said lid includes structural members to bear a portion of load of said hardscape.
- 4 The structural cell of claim 3 wherein a portion of the lid is formed of plastic.

[12] Both before us and before the Federal Court, the parties concurred that the same terms used in the 348 and 599 Patents should be construed in the same way. The Federal Court adopted this approach, and I agree that it is appropriate.

## II. The Reasons of the Federal Court

[13] I turn next to the Reasons of the Federal Court and will review only the portions that are relevant to the issues in this appeal and cross-appeal.

[14] I begin by noting that the Federal Court preferred the expert evidence on construction and validity proffered by DeepRoot over that of GreenBlue, finding, among other things, that the approach of GreenBlue’s expert to claims construction was “... overly technical and narrow” (at para. 40).

[15] The Federal Court construed several terms used in the Claims in the 348 and 599 Patents, including “structural cell(s)”, “a base” and “a top”, the first two of which appear in Claim 1 of both Patents. The appellant challenges the Federal Court’s construction of the three foregoing terms but not the construction of any other terms that the Federal Court undertook.

[16] As concerns the first of the foregoing terms, the Federal Court accepted the evidence of DeepRoot’s expert, Dr. Richard LeBrasseur, and agreed with him that “structural cell(s)”, within the meaning of Claim 1 of the two Patents:

... must be open structures, meaning that they provide a continuous void space that can be filled with soil to promote tree root growth. When structural cells are joined together, they create a layer of continuous void space that extends between neighbouring structural cells. When filled with soil, this continuous void space will provide an uninterrupted soil volume to allow for unimpeded lateral root growth through neighbouring structural cells.

(at para. 93).

[17] The Federal Court further relied on the evidence of Dr. LeBrasseur to construe the term “a base” used in Claim 1 of the 348 and 599 Patents. The Federal Court also referred to passages in the specification contained in the two Patents in support of its construction of “a base”. It held that “a base” as used in Claim 1 “... is intended to provide a stable foundation for the structural cell. The ‘base’ may be integrally formed or formed separately then connected together allowing

for on site assembly” (at para. 106). The Federal Court accordingly rejected GreenBlue’s contention that the base, among other things, had to be a component formed separately from the rest of the cell structure.

[18] With respect to the term “a top”, the Federal Court concluded that a “‘top’ is the uppermost portion of the structural cell that accepts forces from above such as the weight of hardscape or the weight of other structural cells in the system that are positioned above” (at para. 113). In reaching this conclusion, the Federal Court once again relied on the evidence from Dr. LeBrasseur and on statements made in the specifications in the two Patents. In adopting this construction, the Federal Court rejected GreenBlue’s contention that “a top” must be a lid or deck.

[19] The Federal Court discussed the essential elements of the claims in suit in the two Patents, but made findings in respect of the essential elements of the two Patents at large, as opposed to focussing on the essential elements of each of the relevant Claims. This approach is erroneous as the determination of the essential elements for the purposes of claims construction and assessing infringement and anticipation requires consideration of the essential elements of each claim and not the essential elements of a patent as a whole: *Hospira Healthcare Corporation v. Kennedy Trust for Rheumatology Research*, 2020 FCA 30, 316 A.C.W.S. (3d) 537 at paras. 25, 71; *Western Oilfield Equipment Rentals Ltd. v. M-I L.L.C.*, 2021 FCA 24, [2021] 2 F.C.R. 582 at para. 87; *Free World Trust v. Électro Santé Inc.*, 2000 SCC 66, 194 D.L.R. (4th) 232 at paras. 22, 31(d), 38, 51.



[20] However, nothing turns on this error in this appeal.

[21] The Federal Court found that the essential elements of the 348 Patent were as follows:

- [a] structural cell for supporting hardscape areas that enables tree root growth and accommodates filtering, retention, storage and infiltration of storm water while preventing hardscape damage;
- the structural cells each comprising a base;
- the structural cells each comprising a top;
- [the hardscape] substantially covering the structural cells;
- structural members position[ed] to maintain the base and the top at least approximately 8 inches apart;
- at least approximately 85% of the volume can be filled with soil; and
- maintaining the soil within the volume in a low compacted state accommodating natural growth of structural roots of a tree within the volume

(at paras. 141, 173).

[22] These elements all appear in Claim 1 of the 348 Patent.

[23] The Federal Court stated that the essential elements of the 599 Patent were as follows:

- a structural cell for supporting hardscape;
- a base;
- periphery support members;
- at least approximately eighty five percent void space; and
- a lid

(at para. 150).

[24] The first four of the foregoing elements appear in all Claims of the 599 Patent, whereas the final element of a lid appears only in Claims 2 to 4. Thus, the lid is only an essential element of Claims 2 to 4 of the 599 Patent.

[25] The Federal Court noted that GreenBlue had “essentially conceded” that its RootSpace product contained most of the essential elements of Claim 1 of the 348 Patent, with the exception of “a base”, “a top”, and providing that “at least approximately 85% of the volume can be filled with soil” (at para. 180). The Federal Court focussed its consideration of infringement on the foregoing three essential elements and found that GreenBlue’s RootSpace product infringed Claim 1 of the 348 Patent based on the manner in which the Federal Court had construed the foregoing three terms. It was not necessary for the Federal Court to have considered any of the other claims in the 348 Patent.

[26] With respect to the 599 Patent, the Federal Court held that:

... the RootSpace product also infringes the essential elements of Claims 1-4 of the 599 Patent. The RootSpace product has a base, “for attaching to a base,” periphery support members, outer edges, and a lid. The RootSpace product has a lid made out of plastic. The RootSpace product has all the essential elements of the 599 Patent.

(at para. 187).

[27] After finding that the RootSpace product infringed the 348 and 599 Patents, the Federal Court considered the various challenges to their validity advanced by GreenBlue. I need only review the Federal Court’s findings on anticipation (relating to the disclosure element premised on GreenBlue’s assertion that the 2002 annual catalogue of GreenLeaf, as GreenBlue was then

known, disclosed the essential elements of the two Patents), obviousness, and one of its findings on overbreadth. These are the only findings that GreenBlue now disputes before us. (GreenBlue abandoned the arguments made in paragraphs 25 to 36, 41, 52 to 58, and 81 to 84 of its Fresh as Amended Memorandum of Fact and Law during its oral submissions before us. It also conceded that the photographs that precede paragraph 50 of its Memorandum show the incorrect piece of prior art and thus should be ignored.)

[28] With respect to the disclosure element of anticipation, GreenBlue relied on several pieces of prior art before the Federal Court, including the GreenLeaf annual catalogue, published in 2002, which introduced its RootCell system to the marketplace. GreenBlue alleged that the RootCell system disclosed and enabled all the essential elements of the 348 and 599 Patents. The Federal Court disagreed. With respect to the disclosure element, the Court concluded that the RootCell system did not disclose the invention claimed in 348 and 599 Patents because there was:

... no indication that the RootCell prior art could accommodate the retention, storage and filtration of stormwater, substantially support the hardscape or enable structural tree roots to grow. Finally, the RootCell prior art does not provide for the use of a lid as required by the 599 Patent.

(at para. 208).

[29] In reaching this conclusion, the Federal Court preferred and relied on the evidence from DeepRoot's expert, Dr. Richard LeBrasseur, to the evidence adduced by GreenBlue on this issue.

[30] Insofar as concerns obviousness, the Federal Court set out the test from *Apotex Inc. v. Sanofi-Synthelabo Canada Inc.*, 2008 SCC 61, [2008] 3 S.C.R. 265 at para. 67 [*Sanofi*], which requires the following four step analysis to assess obviousness:

- (1) (a) Identify the notional “person skilled in the art”;  
(b) Identify the relevant common general knowledge of that person;
- (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
- (3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed; and
- (4) Consider, when viewed without any knowledge of the alleged invention as claimed, whether those differences constitute steps which would have been obvious to the person skilled in the art or require any degree of invention.

[31] Where advances are developed by experimentation, *Sanofi* provides that an “obvious to try” test may be warranted, under which the following factors may be considered at the fourth step of the obviousness inquiry:

1. Is it more or less self-evident that what is being tried ought to work? Are there a finite number of identified predictable solutions known to persons skilled in the art?
2. What is the extent, nature and amount of effort required to achieve the invention? Are routine trials carried out or is the experimentation prolonged and arduous, such that the trials would not be considered routine?
3. Is there a motive provided in the prior art to find the solution the patent addresses?

4. What was the actual course of conduct that resulted in the invention?

(at paras. 69-70).

[32] Despite stating the foregoing test correctly, the Federal Court did not conduct its obviousness analysis on a claim-by-claim basis and instead assessed obviousness in relation to each Patent as a whole. This approach is erroneous because obviousness is to be assessed with reference to each claim at issue as opposed to a patent as a whole: see, *e.g.*, *Sanofi* at para. 67(2); *AFD Petroleum Ltd. v. Frac Shack Inc.*, 2018 FCA 140, 157 C.P.R. (4th) 195 at para. 47 (citing to *Zero Spill Systems (Int'l) Inc. v. Heide*, 2015 FCA 115, 130 C.P.R. (4th) 291 at paras. 83, 85).

[33] However, once again, this error in approach is immaterial in the present appeal as the same result would have been obtained if the Federal Court had instead adopted the correct analytical framework.

[34] With respect to obviousness, the Federal Court held that the mosaic of prior art relied upon by GreenBlue did not demonstrate that the two Patents were obvious because all of the prior art, with the exception of GreenBlue's RootCell product, did not relate to systems that support tree growth, but instead related to water management.

[35] As concerns the RootCell product, the Federal Court applied the "obvious to try" test to assess its impact and agreed with DeepRoot's expert that:

... the gap between the original RootCell and the DeepRoot patents is too vast to bridge without inventive ingenuity...indeed, it took GreenBlue over a decade to

arrive at a suitable open design...for which GreenBlue has sought its own patent protection.

(at para. 244, citing from the report of Dr. LeBrasseur).

[36] The Federal Court continued by noting that GreenBlue's infringing RootSpace product was not the natural next step from the RootCell product and that design changes were required to achieve it. The Federal Court further found that the RootCell product, unlike the RootSpace product, "...depended upon an entirely different system that did not feature an 'open' design" (at para. 246). It continued, stating:

... even considering the RootCell prior art in combination with the other prior art, I am not convinced that the POSITA would have arrived at the open concept. The prior art was in fact counter intuitive to an open design, and where there was something akin to an open design, such as grass rings and RootCells, the opening available for vegetation were too small and too restricted so as to make it obvious to get to a product described in the 348 and 599 Patents.

(at para. 246).

[37] The Federal Court accordingly dismissed GreenBlue's obviousness arguments.

[38] With reference to overbreadth, GreenBlue alleged, among other things, that the two Patents were invalid for overbreadth because they omitted a top or lid with two metal rods, which it alleged were essential for the system to function. The Federal Court rejected this contention, finding that this allegation related to DeepRoot's commercial product but was not at issue in respect of the claimed insufficiency or overbreadth of the Claims in suit. The Federal Court dismissed this and other overbreadth allegations made by GreenBlue.

[39] After finding the two Patents to be valid and infringed, the Federal Court turned to the issue of remedy. It accepted GreenBlue's contentions that it had not profited from the sale of the infringing RootSpace product and that it suffered a net loss on such sales between 2017 and 2020.

[40] In accepting the figures advanced by GreenBlue to establish the claimed net loss, the Federal Court applied the total costs approach endorsed by this Court in *Nova Chemicals Corporation v. Dow Chemical Co.*, 2020 FCA 141, [2021] 1 F.C.R. 551, aff'd 2022 SCC 43 [*Nova Chemicals* (F.C.A.)]. The Supreme Court did not deal with the total costs issue (see *Nova Chemicals* SCC at para. 16). The Federal Court deducted from the gross sales of the RootSpace product, made in Canada by GreenBlue, the costs it stated it had incurred on account of the cost of goods sold (COGS), and an allocation for overhead it alleged it had incurred with reference to the infringing product.

[41] The COGS claimed by GreenBlue related to the cost of purchasing the RootSpace product from its manufacturer (a U.K. company related to GreenBlue), duty paid by GreenBlue on the import of the product, and freight charges that GreenBlue claimed it had paid for the shipment of the product to Canada.

[42] The overhead costs, on the other hand, were calculated simply as a percentage of GreenBlue's total overhead costs. GreenBlue arrived at its overhead figures by allocating to the infringing product the equal percentage of the overhead costs that sales of the infringing product bore to the total gross sales of all products sold by GreenBlue.

[43] The Federal Court accepted GreenBlue’s overhead figures, stating that:

DeepRoot argues that GreenBlue failed to disclose financial records, and that it is not reasonable to accept that GreenBlue is selling RootSpace at a loss. DeepRoot argues that GreenBlue should not be permitted to deduct freight, import fees or over-head from its infringing revenues. However, DeepRoot was not able to establish any fundamental flaws or irregularities with the financials.

(at para. 277)

[44] Because it found that GreenBlue had not profited on sales of the infringing RootSpace product, the Federal Court declined to award an accounting of profits and instead awarded damages to DeepRoot on account of royalties.

### III. GreenBlue’s Appeal

[45] With this background in mind, I turn next to address the issues raised by GreenBlue in its appeal.

[46] GreenBlue submits that the Federal Court erred in law in respect of its construction of the terms “structural cells”, “a base”, and “a top”, and that the Federal Court made palpable and overriding errors of fact in respect of anticipation, obviousness and overbreadth.

[47] With respect, I disagree and find that the Federal Court did not so err.



A. *Did the Federal Court Err in Construction of the Three Terms as GreenBlue Alleges?*

[48] On the construction issues, I agree with GreenBlue that, generally speaking, issues of construction raise issues of law that are reviewable for correctness: *Whirlpool Corp. v. Camco Inc.*, 2000 SCC 67, [2000] 2 S.C.R. 1067 at paras. 61, 76; *Mylan Pharmaceuticals ULC v. AstraZeneca Canada Inc.*, 2012 FCA 109, 101 C.P.R. (4th) 275 at para. 20; *Abbott Laboratories v. Canada (Health)*, 2009 FCA 94, 73 C.P.R. (4th) 444 at para. 20 [*Abbott Laboratories*].

[49] However, where construction is premised on the Federal Court’s appreciation of the expert evidence, and especially where that Court has preferred the testimony of one expert over another on an issue of construction, this Court has held that the Federal Court is entitled to deference in its appreciation of the evidence: see e.g., *Biogen Canada Inc. v. Pharmascience Inc.*, 2022 FCA 143, 196 C.P.R. (4th) 120 at para. 38; *Viiv Healthcare Company v. Gilead Sciences Canada, Inc.*, 2021 FCA 122, 460 D.L.R. (4th) 272 at para. 56; *Evolution Technologies Inc. v. Human Care Canada Inc.*, 2019 FCA 209, 167 C.P.R. (4th) 285 at para. 17; *ABB Technology AG v. Hyundai Heavy Industries Co., Ltd.*, 2015 FCA 181, 132 C.P.R. (4th) 405 at paras. 23-24.

[50] Here, regardless of what standard of review is applied, I see no error in the Federal Court’s construction of the terms “structural cells”, “a base”, or “a top”.

[51] There was ample evidence to support the Federal Court’s construction from DeepRoot’s expert, Dr. LeBrasseur, whose evidence the Federal Court preferred. There is accordingly no palpable and overriding error in the Federal Court’s construction of the three terms if the deferential standard is applicable.

[52] Conversely, even under a correctness standard, there is no basis for interfering with the Federal Court’s construction because it is supported by a purposive interpretation of the three terms and is thus correct.

[53] More specifically, as concerns the meaning of “structural cell(s)”, the specification in the Patents makes it clear that the invention is intended to provide void space within which tree roots can grow and thus requires that the cell be an open structure. Paragraph 36 of the specification in the 348 and 599 Patents provides:

The system is designed such that the tree roots may grow within the system such that conflicts between the roots and the paving will be greatly reduced. ...

[54] Paragraph 37 of the specification in the 348 and 599 Patents continues:

The integrated tree root and storm water system contains multiple three-dimensional structural cells or frames that are joined together. The structural cells are strong enough to withstand design vehicle loading, maintain an open structure that can be filled with loam soil, and permit tree roots to grow within the cell in both horizontal and vertical axis. ...

[55] When the Claims in suit are read in the context of the specification, it is clear that the “structural cells” claimed are meant to allow roots to grow within them and thus must be open structures as the Federal Court found.

[56] Turning to the meaning of “a base”, the construction advanced by GreenBlue that was rejected by the Federal Court improperly sought to limit the term to a single embodiment mentioned in the Patent. The specification, however, makes it clear in another embodiment that the “base” in that other embodiment is not a separate part and may be integrally formed with the supports. The final sentences in paragraph 61 of the two Patents provides:

... In one embodiment, the base 711 and the supports 703 and 704 are integrally formed as a single structure. In another embodiment, the base 711 and the supports 703 and 704 are formed separately and then assembled together. This allows on site assembly.

[57] The foregoing accords with the meaning given to “a base” by the Federal Court, which accordingly did not err in its construction.

[58] As concerns the meaning of “a top”, contrary to what GreenBlue asserts, the inventors did not intend that “a top” be understood to be the same thing as a lid or deck. The three terms are all used in the 348 and 599 Patents in such a fashion that it becomes clear that a lid or deck is not synonymous with “a top”. For example, paragraph 54 of the Patents mentions that, “[w]hen the top cell 226 is filled with soil as in the system 300, the material travels through an air space between the top of the soil and the underside of the lid structure.”

[59] I therefore see no error in the Federal Court’s construction of the impugned terms.

B. *Did the Federal Court Err on Validity Issues as GreenBlue Alleges?*

[60] Turning to the issues of anticipation, obviousness and overbreadth, as GreenBlue acknowledges, the Federal Court's impugned findings can only be overturned if the Court made a palpable and overriding error since these findings are factual in nature: see e.g., *Abbott Laboratories* at para. 24 (on anticipation); *SmithKline Beecham Pharma Inc. v. Apotex Inc.*, 2002 FCA 216, 219 D.L.R. (4th) 124 at para. 15 (on anticipation); *Packers Plus Energy Services Inc. v. Essential Energy Services Ltd.*, 2019 FCA 96, 164 C.P.R. (4th) 191 at para. 29 [*Packers*] (on obviousness); *Teva Canada Limited v. Pfizer Canada Inc.*, 2019 FCA 15, 163 CPR (4th) 265 at para. 23 (on obviousness); *Seedlings Life Science Ventures, L.L.C. v. Pfizer Canada U.L.C.*, 2021 FCA 154, 339 A.C.W.S. (3d) 69 at para. 65 (on overbreadth).

[61] The palpable and overriding error standard is an exacting one — an error is not palpable unless it is plainly seen and not overriding unless it affects the result. Where the evidence is capable of supporting a trial court's factual findings, its findings cannot be set aside on the basis of palpable and overriding error: *Housen v. Nikolaisen*, 2002 SCC 33, 211 D.L.R. (4th) 577 at para. 23; *Packers* at para. 31; *Janssen-Ortho Inc. v. Apotex Inc.*, 2009 FCA 212, 75 C.P.R. (4th) 411 at paras. 98, 102.

[62] Here, there was evidence to support the Federal Court's findings in respect of anticipation, obviousness, and overbreadth that GreenBlue now challenges, which accordingly cannot be set aside by this Court.

[63] More specifically, as concerns anticipation, GreenBlue asserts that the Federal Court made a palpable and overriding error in finding that the 2002 GreenLeaf catalogue, which disclosed the RootCell product, did not disclose the invention claimed in the 348 and 599 Patents. However, there was evidence from Dr. LeBrasseur in both his responding expert report (at paragraphs 142-157 and 177-186) and in his oral testimony (including his examination in chief on October 28, 2020, Trial Transcript at 1621, lines 16-22, 1622, line 17 to 1635, line 20) that supports the Federal Court's conclusion on anticipation. The Federal Court accordingly did not commit a reviewable error in concluding that the GreenLeaf catalogue did not disclose the invention claimed in the 348 and 599 Patents.

[64] As concerns obviousness, GreenBlue essentially invites this Court to reconduct the obviousness analysis and to reach a different conclusion from that reached by the Federal Court by reweighing and reconsidering what the cited prior art taught and disclosed. However, that is not our role. We cannot intervene in the absence of a palpable and overriding error. Here, there is no such error because evidence from Dr. LeBrasseur supports the Federal Court's findings (responding expert report at paragraphs 210-291 and oral evidence, examination in chief of Dr. LeBrasseur, on October 28, 2020, Trial Transcript at 1665, line 1 to 1681, line 3).

[65] Finally, with respect to overbreadth, GreenBlue asks us to reach a different conclusion from the Federal Court and to find that metal rods, which were not claimed in the two Patents, are essential for the invention to work. GreenBlue says that such a finding would render the Patents in suit void for overbreadth and "covetous and speculative overclaiming" (GreenBlue's Fresh as Amended Memorandum of Fact and Law on the appeal, at para. 78).

[66] This submission is premised on the assertion that the evidence established that without the metal rods, the invention would not function. In support of this contention, GreenBlue relies on the fact that the load testing report related to DeepRoot's final commercial product showed that the product failed without the inclusion of the metal rods attached to the lid.

[67] However, as DeepRoot notes, this testing related only to DeepRoot's commercial product, which was designed to "arrive at the sweet spot between the cost and the marketplace entry" (DeepRoot's Memorandum of Fact and Law in respect of the appeal, at para. 85). Other testing conducted prior to the product launch demonstrated viability without the rods via standard tests conducted through AutoCAD and Finite Element Analyses as Mr. Ray, one of the inventors and the CEO of DeepRoot, testified.

[68] Moreover, when questioned as to whether the metal rods were required for load bearing, Mr. Ray stated they were not and that the desired result "...could have been accomplished without adding the steel tubes. We could have made the deck thicker" (cross-examination of Mr. Ray on October 12, 2020, Trial Transcript at 193, lines 17-18). Thus, there was evidence before the Federal Court to support its conclusion that the overbreadth allegation based on the necessity of the metal rods related only to DeepRoot's commercial product, but was not at issue in respect of the Claims in suit, themselves, which do not require metal rods.

[69] The Federal Court's finding in respect of overbreadth is therefore not vulnerable to being set aside due to a palpable and overriding error.

[70] I thus conclude that the Federal Court did not make any of the errors alleged by GreenBlue and would accordingly dismiss its appeal, with costs.

#### IV. DeepRoot's Cross-Appeal

[71] I turn next to consider DeepRoot's cross-appeal. It alleges that the Federal Court made several errors in principle in finding that GreenBlue did not profit from its sales of the RootSpace product. It also alleges that the Federal Court made a palpable and overriding error in accepting one of GreenBlue's calculations.

[72] DeepRoot more specifically says that the Federal Court erred in law by failing to conduct the necessary analysis to establish a causal connection between GreenBlue's claimed overhead and the profits it earned through infringement, thereby allowing GreenBlue to wrongfully shield its profits from disgorgement. DeepRoot adds that there was no evidence to establish what portion of GreenBlue's general overhead expenses were related to the infringing sales and that it was accordingly an error for the Federal Court to have accepted GreenBlue's percentage allocation. DeepRoot also says that, in any event, as a matter of principle, certain of GreenBlue's costs could not be deducted at all, namely, the legal fees incurred in defence of DeepRoot's patent infringement action.

[73] DeepRoot further submits that the Federal Court improperly reversed the burden of proof, requiring it to establish the inaccuracy of GreenBlue's calculations as opposed to requiring GreenBlue to show that it did not profit from the infringing sales of the RootSpace product. It

relies in particular on paragraph 227 of the Federal Court’s Reasons, where the Court stated that, “DeepRoot was not able to establish any fundamental flaws or irregularities with the financials [tendered by GreenBlue]”.

[74] DeepRoot adds that GreenBlue failed to call evidence to establish the accuracy of its freight charges, which accounted for a significant portion of its COGS. It submits that the Federal Court therefore made a palpable error in allowing these charges to be deducted from GreenBlue’s profits.

[75] GreenBlue, in response, concedes that the costs it incurred in defence of the patent infringement action ought not have been included in the calculations. It also now admits that amounts it claimed for amortization and consulting fees likewise bore no causal connection to the infringing sales and accordingly should likewise be removed from the calculations. However, GreenBlue contends that the remaining deductions were appropriate and that the Federal Court did not err in allowing them. It asserts that, even when amounts for legal fees, amortization and consulting fees are disregarded, it still incurred no profit. It therefore says that the cross-appeal should be dismissed.

[76] In discussing these issues, it is useful to commence by setting out the applicable principles.

[77] In this regard, an accounting of profits is akin to the equitable remedy of restitution, and is available for patent infringement by virtue of paragraph 57(1)(b) of the *Patent Act*, R.S.C.



1985, c. P-4. An accounting of profits is an alternative remedy to an order for payment of damages, which is available by virtue of subsection 55(1) of the *Patent Act*.

[78] The damages remedy focuses on the losses incurred by the patentee and aims to compensate a plaintiff for losses incurred due to the infringement. These may include, among other things, lost profits incurred by reason of sales lost by the plaintiff due to the infringement or compensation for reasonable royalties the plaintiff would have earned had the defendant agreed to pay a royalty.

[79] An accounting of profits, on the other hand, focuses on the profits wrongfully earned by the infringer and requires that the defendant disgorge to the plaintiff the amount of profits earned by reason of the infringement. As explained at length in *Nova Chemicals (F.C.A.)*, the accounting of profits remedy is a necessary tool to deter infringement by those who could make profits in excess of the damages they would cause to a patent holder.

[80] A court possesses discretion as to whether or not to award an accounting of profits. Therefore, a court is not necessarily required to give effect to a plaintiff's election for an accounting of profits and may refuse the remedy where it would be inequitable to award it. This may, for example, be the case if there is excessive delay or misconduct by the patentee: *Apotex Inc. v. Bayer Inc.*, 2018 FCA 32, [2018] 4 F.C.R. 58 at paras. 60-61, 67 [*Apotex v. Bayer*], citing *Beloit Canada Ltd. v. Valmet-Dominion Inc.* (C.A.), [1997] FCJ No 486 (QL), [1997] 3 FC 497 at 545; *Merck v. Apotex*, 2006 FCA 323, [2007] 3 F.C.R. 588 at para. 127. As noted at paragraph 67 of *Apotex v. Bayer* :

... the election of a final accounting of profits, following a determination of infringement, necessarily belongs to a patentee, subject to the Court's discretion. In other words, the Court can refuse to grant the remedy of accounting in which case the patentee shall be entitled to its damages. It is also clear that the Court cannot oblige the patentee to accept as a remedy an accounting of profits if it is not willing to do so.

[81] With respect to both the remedy of damages and that of disgorgement, proof of a causal connection to the infringement is required.

[82] Dealing more specifically with disgorgement, in *Monsanto Canada Inc. v. Schmeiser*, 2004 SCC 34, [2004] 1 S.C.R. 902, the majority noted at paragraph 101 that:

It is settled law that the inventor is only entitled to that portion of the infringer's profit which is causally attributable to the invention: *Lubrizol Corp. v. Imperial Oil Ltd.*, 1996 CanLII 4095 (FCA), [1997] 2 F.C. 3 (C.A.); *Celanese International Corp. v. BP Chemicals Ltd.*, [1999] R.P.C. 203 (Pat. Ct.), at para. 37. This is consistent with the general law on awarding non-punitive remedies: "[I]t is essential that the losses made good are only those which, on a common sense view of causation, were caused by the breach" (*Canson Enterprises Ltd. v. Boughton & Co.*, 1991 CanLII 52 (SCC), [1991] 3 S.C.R. 534, at p. 556, per McLachlin J. (as she then was), quoted with approval by Binnie J. for the Court in *Cadbury Schweppes Inc. v. FBI Foods Ltd.*, 1999 CanLII 705 (SCC), [1999] 1 S.C.R. 142, at para. 93).

[83] In a damages claim, the plaintiff bears the burden of establishing the quantum and nature of the damages it suffered on the balance of probabilities: *TPG Technology Consulting Ltd. v. Canada*, 2016 FCA 279 at para. 37; *Janiak v. Ippolito*, [1985] 1 SCR 146 at para. 32.

[84] Where disgorgement is sought, the plaintiff likewise bears the burden of establishing the infringer's profits. However, because the information regarding details of costs incurred in making sales is largely, if not exclusively, within the knowledge of the infringer, the plaintiff is

only required to establish the infringer's sales when establishing profits. The onus then shifts to the defendant to establish the elements of costs to be deducted from those sales to establish its profit: see e.g. *Monsanto Canada Inc. v. Janssens*, 2009 FC 318, at para. 32; *Diversified Products Corp. v. Tye-Sil Corp.*, [1990] F.C.J. No. 952, 32 C.P.R. (3d) 385 at 390; *Teledyne Industries Inc. v. Lido Products Ltd.* (1982), 17 A.C.W.S. (2d) 391 (F.C.), 68 C.P.R. (2d) 204 at 209.

[85] There are different approaches as to how to calculate profits, notably the full costs approach and the incremental costs approach. Under the latter, only those additional costs incurred by reason of the production of an infringing product may be deducted from sales figures to establish the defendant's profits earned through infringement. Under the full costs approach, on the other hand, all costs, including an approximation of fixed overhead costs causally connected to the infringing sales, may be deducted from the sales figures to arrive at the profits earned by the defendant through infringement.

[86] The decision in *Nova Chemicals* (F.C.A.) clarifies that, at least in this Court and the Federal Court, the full costs approach is the preferred approach for calculating the quantum of profits earned through infringement for purposes of determining the availability of an order for disgorgement of profits and the quantum of such disgorgement.

[87] As noted in *Nova Chemicals* (F.C.A.), the full costs approach accounts for actual profits earned from and actual costs incurred in respect of infringing sales actually made by the infringer

or on its behalf. Thus, hypothetical costs or lost opportunity costs incurred by reason of the infringement are to be ignored.

[88] According to *Nova Chemicals* (F.C.A.), the full costs that may be deducted from profits under the full costs approach include both incremental costs incurred by reason of the infringing sales (in the case at bar, the COGS), as well as the portion of the infringer's stagnant, fixed costs that are causally attributable to the infringing product. Writing for the majority of the Court, in *Nova Chemicals* (F.C.A.), Stratas J.A. explained the nature of such stagnant, fixed costs that may be deducted under the full costs approach at paragraphs 158 to 161 as follows:

[158] Consider a factory that produces eight separate infringing product lines where each product infringes a different patent. If each of the eight patentees brings separate infringement proceedings, could the infringer never deduct its overhead costs? Certainly each product absorbed a portion of those necessary overhead costs: *Dart Industries*, at pages 116–120; *Tremaine v. Hitchcock*, 90 U.S. 518 (1874).

[159] What if only seven of the eight product lines are infringing? Should the one non-infringing product line shoulder all of the overhead? It is clear that those overhead costs were necessary to produce the infringing products. Indeed, if proportionate fixed costs are not deducted, the overhead that was absorbed by the infringing product will be shifted on to an infringer's non-infringing products. This would unfairly burden a perfectly legal product line for no principled reason.

[160] Denying the deduction of fixed costs generates a distorted picture of the infringer's profits. It may be the case that an infringer has minimal variable costs but very high overhead costs such that the product is not, in fact, profitable. The incremental approach advocated for in *Teledyne* could force that infringer to disgorge "profits" from an unprofitable product.

[161] The fear that allowing a deduction of fixed costs would permit an infringer to, in effect, subsidize its non-infringing products is unfounded. An infringer would only be entitled to deduct a proportion of its fixed costs. For example, if an infringing product occupies 1 percent of a factory's production capacity or volume, only 1 percent of the fixed costs will be deducted.

[89] As the forgoing passage makes clear, fixed non-incremental overhead costs may be deducted from sales to establish an infringer's profit, but proof of causation is still required. In other words, the defendant must establish some link between the claimed portion of the overhead and the infringing sales. However, it is not necessary for the defendant to show that these fixed costs are in addition to the fixed costs that otherwise would have been payable by the defendant.

[90] In *Stratas J.A.*'s example, the total amount of overhead at issue related exclusively to the costs to operate the factory where the infringing product was produced. Thus, *Stratas J.A.* appears to indicate that the allowable deduction for the portion of the overhead related to the infringing product could be calculated by applying, to the total overhead cost, the proportion of production the infringing sales bore to the total production made in the factory where the overhead was incurred.

[91] In *Stratas J.A.*'s example, the total amount of the overhead at issue relates to a single factory, where the infringing product and other products were produced. In those circumstances, an apportionment of overhead costs like that undertaken by *GreenBlue* in the case at bar might well be appropriate as it is clear that there is some causal connection between the overhead incurred and the production of the infringing product.

[92] However, this rough and ready approach to attributing cost requires a factual foundation to establish the requisite causal connection. One cannot always simply assume that a proportion of a corporation's total overhead costs proportionate to the percentage of sales generated by the infringing product may be deducted under the total costs approach in every case.

[93] An example makes clear why the approach adopted by GreenBlue and accepted by the Federal Court in the case at bar cannot be universally applied.

[94] Suppose a company has two factories and produces the infringing product only in one. Suppose its overhead for the plant where the infringing product was not produced is substantially higher than for the plant where the infringing product is made. Suppose also that the company earns half of its profits from goods made in each of the factories. In this fact pattern, it would be incorrect to calculate the proportion of overhead cost attributable to the infringing product as being 50% of the combined overhead for the two factories as this overestimates the costs incurred in producing the infringing product. There is, in other words, no causal connection between some of the 50% of the total overhead costs and the profits earned by reason of the infringing product.

[95] What the foregoing examples demonstrate is that the approach to quantifying overhead costs for purposes of establishing profits earned through infringement is highly fact-dependent.

[96] Here, the Federal Court accepted GreenBlue's calculations for overhead attributed to the infringing sales without any discussion of why they were appropriate. Indeed, the Federal Court seems to have largely ignored the requirement for any causal link between the costs claimed and the infringing sales because it wrongfully attributed elements that GreenBlue now concedes were inappropriate as they were not causally connected to the sales of infringing products. These included the costs of defending the patent infringement litigation, which cannot be deducted: see

e.g. *Baker Petrolite Corp. v. Canwell Enviro-Industries Ltd.*, 2001 FCT 889, [2002] 2 FC 3 (T.D.) at para. 157, rev'd on other grounds 2002 FCA 158, [2003] 1 FC 49.

[97] I therefore agree with DeepRoot that the Federal Court erred in accepting GreenBlue's figures without appreciating and analyzing whether and how the overhead costs claimed were causally connected to the infringing sales.

[98] The present case is to be distinguished from the approach of the Federal Court in *Dow Chemical Company v. Nova Chemicals Corporation*, 2017 FC 637, 282 A.C.W.S. (3d) 845, aff'd in 2020 FCA 141. There, based on the evidence of the defendant given on discovery that fixed costs per pound were substantially the same for infringing and non-infringing products, the Federal Court allocated—on a “relative production volumes” basis—a proportional amount of certain fixed capital costs, discussing why this approach was appropriate. The Court wrote as follows at paragraphs 9-14:

[9] Subparagraph 5(b) of the Judgment in *Dow v Nova* states that Nova may deduct a proportional amount of certain fixed and capital costs, including costs categorized as Plant, Distribution, Sales & Marketing, Technical and Administration, from the revenues derived from the sales of the infringing products for the period August 22, 2006 to December 31, 2015. The parties disagree on the manner in which these costs should be allocated between infringing and non-infringing products.

[10] The parties' accountants have adopted different approaches to allocating fixed costs of the PE2 plant to the infringing products. Dow's accountant, Ross Hamilton, concluded that these costs should be allocated based on relative production volumes. Nova's accountant, Errol Soriano, allocated the costs on a number of different bases, based on the instructions of counsel and the opinion of Nova's economist, Randall Heeb.

[11] Dow complains that Nova's approach results in the allocation of higher fixed costs to infringing products than to non-infringing products. Dow notes that during discovery, Nova stated that “[t]he fixed costs associated with producing

infringing grades do not materially differ from those for producing non-infringing products".

[12] In his expert report, Mr. Hamilton relied on Nova's discovery evidence that the fixed costs per pound were substantially the same for infringing and non-infringing products. In cross-examination, counsel for Nova suggested to Mr. Hamilton that this supported Nova's claim that the production of alternative non-infringing products would have absorbed the fixed costs associated with the manufacture of the infringing products. Counsel for Nova did not suggest to Mr. Hamilton that this assumption was incorrect.

[13] Nova's experts have proposed the use of three different allocation keys: (a) "pounds produced" or "billed volumes" for its costs relating to distribution; (b) "net revenue" for costs categorized as "Administration, Sales and Marketing"; and (3) "reactor hours" for "Plant and Technical" costs. While this approach is premised on potentially valid distinctions between different categories of costs, I agree with Dow that Nova has not adduced evidence to support it.

[14] Given the evidence provided by Nova on discovery, Mr. Hamilton's reasonable reliance on that evidence in formulating his opinion, and Nova's reinforcement of his assumption in cross-examination, I conclude that the appropriate basis for allocating fixed costs for the PE2 plant is "billed volume", as described by Mr. Hamilton.

[99] A similar analysis of the causation issue with reference to the claimed overhead is entirely absent in the case at bar, where GreenBlue called no expert evidence to support it.

[100] That said, it does not necessarily follow that DeepRoot is entitled to the amount it claims in its cross-appeal by way of an accounting of profits, nor does it mean that GreenBlue should be found not to have earned profits from the infringing sales.

[101] While the evidence of the two witnesses called by GreenBlue to validate the calculations did not provide much detail about the requisite causal connection between the amount of overhead claimed and the production of the infringing products, there may well have been other evidence before the Federal Court about GreenBlue's operations from which one could properly



infer that the amounts now claimed by GreenBlue on account of overhead were causally connected to the production of the infringing products.

[102] To determine whether this is so, it is necessary to review the entirety of the voluminous record that was before the Federal Court. I believe it most appropriate that the Federal Court judge who made the decision under appeal reconduct the necessary review to determine whether there is a basis for deducting the overhead costs now claimed by GreenBlue. She is in a better position than this Court to appreciate the entirety of the factual record. Thus, the issue of causation in respect of overhead costs should be remitted to Justice McDonald of the Federal Court.

[103] I turn finally to DeepRoot's challenge to the amounts claimed as part of the COGS on account of freight and see no palpable and overriding error in the Federal Court's acceptance of GreenBlue's estimate for these figures, which were generally explained by Mr. Jeremy Bailey, GreenBlue's General Manager of GreenBlue North America and Carol Daly, its bookkeeper. Both testified as to how the freight numbers generally were calculated. Although they did not themselves perform the calculations, their testimony was sufficient for the Federal Court to have accepted the figures as accurate. Indeed, DeepRoot does not argue before us that the Federal Court erred in allowing their testimony about the freight charges over DeepRoot's hearsay objection.

[104] Therefore, based on the testimony of Mr. Bailey and Ms. Daly, it was not a palpable and overriding error for the Federal Court to have accepted the freight calculations advanced by

GreenBlue as part of its COGS. Thus, the only portion of the damages calculation that requires reconsideration is that related to the attribution of a portion of overhead costs.

V. Proposed Disposition

[105] For the foregoing reasons, I would dismiss the appeal of GreenBlue, allow the cross-appeal of DeepRoot, and remit the issue of the appropriateness of an award of an accounting of profits to Justice McDonald of the Federal Court for redetermination in accordance with these Reasons. I would also award DeepRoot its costs of the appeal and cross-appeal since I would find it largely successful in respect of both.

“Mary J.L. Gleason”

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J.A.

“I agree  
Judith Woods J.A.”

“I agree  
Anne L. Mactavish J.A.”

**FEDERAL COURT OF APPEAL**

**NAMES OF COUNSEL AND SOLICITORS OF RECORD**

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**CONCURRED IN BY:** WOODS J.A.  
MACTAVISH J.A.

**DATED:** SEPTEMBER 13, 2023

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